

REMARKS

These remarks address the Examiner's comments made in the Office Action mailed 9/8/2004. The section numbers used below parallel those used in corresponding sections of the office action.

(1) Objection to Drawings

The drawings were objected to because "fork lowers" in Claim 22 were not identified.

Claim 22 has been amended, with the phrase "fork lowers" being replaced with the phrase "fork bottoms". The fork bottom is element 20, is referred to in the spec as a "fork bottom", and is shown in Figs. 1-4 and described on page 3 lines 28-29 and elsewhere in the spec.

(2) Rejection under 35 USC 112, first paragraph

Claim 22 was rejected under 35 USC first paragraph as failing to comply with the written description requirement.

Claim 22 has been amended, with the phrase "fork lowers" being replaced with the phrase "fork bottoms". The fork bottom is element 20, is referred to in the spec as a "fork bottom", and is shown in Figs. 1-4 and described on page 3 lines 28-29 and elsewhere in the spec.

(3) Rejection under 35 USC 112, second paragraph

Claims 8-11, 17-18, and 22-24 were rejected for failing to point out and distinctly claim the invention.

Claim 8 and 17-18 have been cancelled without prejudice.

Claim 22 has been amended to recite "fork bottoms" rather than "fork lowers", and to eliminate the entire clause which included the phrase "integral parts".

Claim 23 does, in fact, recite two passages: "a shock tube ... including a passage therethrough" and "a top bolt ... having a passage therethrough". The phrase "a setting

adjustment mechanism which is accessible via the passages through the top bolt and the shock tube” references those two passages – one through the shock tube, and one through the top bolt.

(4) 102 Rejection over Hoose

Claims 1-4, 6-12, 17-22, and 25-26 were rejected under 35 USC 102(b) over US Patent No. 6,371,263 to Hoose.

Claim 1 as amended recites a steering tube (referentially in the preamble), a coil-over shock, and a shock tube, and further that the upper end of the shock tube is coupled to the coil-over shock.

By way of contrast, Hoose does not include those three distinct components. Hoose includes a steering tube 60 which is part of the vehicle’s frame, and he includes a “shock absorber 50” (col. 4 lines 32, 55-60). Pointedly, Hoose indicates that “when the upper shock absorber 50, as shown in Fig. 1, is provided, the steering stem or shaft is not used.” Applicant’s shock tube is, in essence, a greatly enlarged and hollowed out steering stem. Thus, Hoose expressly teaches away from the claimed combination. Furthermore, Claim 1 requires that the upper end of the shock tube be coupled to the coil-over shock. Hoose has either a steering stem or a shock absorber, but expressly and clearly indicates that he does not have both; thus, he cannot have the upper end of one coupled to the other, as required in Claim 1.

The term “coil-over shock” is not used in the spec, but is in quite common usage in the industry. Those of ordinary skill in the art will readily and immediately recognize component 34 in Figs. 1-5 and 7, and components 110,112 in Fig. 6 as a coil-over shock. Examples of the phrase’s common usage are found at, among other places:

<http://www.tonyfoale.com/Articles/Springs/Springs.htm> (note that Tony Foale is a famous and leading expert in motorcycle frame and chassis design)

http://www.chevyhiperformance.com/techarticles/148_0208_coil/

<http://www.jegs.com/cgi-bin/ncommerce3/CategoryDisplay?cgmenbr=361&cgrfnbr=540>

Claims 2-3, 6-7, and 9-12 depend from Claim 1, and thus include at least two limitation which Hoose teaches away from.

Claims 17-18 have been cancelled.

Claim 19, as amended, includes both a shock tube and a coil-over shock disposed within the shock tube. Again, Hoose has one or the other, but never both together.

Claims 20-22 and 25-26 depend from Claim 19.

(5A) 103(a) Rejection over Hoose and Pileggi

Claim 5 was rejected under 35 USC 103(a) as unpatentable over Hoose in view of US Patent No. 5,511,811 to Pileggi.

Claim 5 depends from Claim 1, which has been demonstrated to require elements which Hoose lacks and, in fact, teaches away from. Pileggi does, indeed teach a vent to depressurize the forks. However, the combination of Hoose and Pileggi does not address the limitations identified above.

(5B) 103(a) Rejection over Hoose and Hartmann

Claims 13-16, and 23-24 were rejected under 35 USC 103(a) as unpatentable over Hoose in view of US Patent No. 4,881,750 to Hartmann.

Hartmann teaches a very clever arrangement where the damper itself is used as the steering stem. Hartmann's device includes a steering tube 4 ("head tube" in his parlance), and a damper which is comprised of a cylinder 5 ("steering tube" in his parlance), a piston 10 ("fork tube" in his parlance), and various internal damping components such as seals and valves.

Hartmann does not have both a shock tube and a shock. Rather, he has cleverly modified the outer "cylinder" portion of his damper to function as the steering stem. Recall that the claimed "shock tube" is, in essence, a steering stem which has been enlarged and hollowed out so that a complete coil-over shock can fit within it. Neither Hoose nor Hartmann nor their combination suggests this.

CANNONDALE ART

U.S. Patent Nos. 5,308,099 issued May 3, 1994 to Browning; 5,320,374 issued Jun. 14, 1994 to Farris et al.; 5,449,155 issued Sep. 12, 1995 to Mack; 5,494,302 issued Feb. 27, 1996 to Farris et al.; 5,509,674 issued Apr. 23, 1996 to Browning; 5,634,653 issued Jun. 3, 1997 to Browning; 5,702,092 issued Dec. 30, 1997 to Farris et al.; 5,924,714 issued Jul. 20, 1999 to Farris et al.; 6,007,056 issued Dec. 28, 1999 to Farris et al.; 6,135,477 issued Oct. 24, 2000 to D'Aluisio et al.; 6,145,862 issued Nov. 14, 2000 to D'Aluisio et al.; 6,155,541 issued Dec. 5, 2000 to Farris et al. All are assigned to Cannondale Corporation, a maker of off-road type bicycles.

The Cannondale patents describe various front suspension units which are commercially available on Cannondale bicycles. Some of these suspensions include suspension components coaxially located within the steering tube of the bicycle frame. Some are believed to be sold under the Cannondale HeadShok trademark. Others are believed to be sold under the Cannondale Lefty trademark.

The '099 patent, the '674 patent, and the '653 patent teach bicycle suspensions in which the steering stem itself comprises a shock absorber which includes an internal spring 28. The outer tube 10 of the shock absorber serves as the steering stem, and fits within the frame's steering head tube 7. A steering linkage 8 provides steering connection between the handlebars and the rigid fork tubes 6. The shock absorber cannot be removed without removing the forks, which are coupled to the bicycle only by the shock absorber.

The '374 patent teaches a similar bicycle suspension in which four sets of linear needle bearings 36 have replaced the steering linkage (8) of the '099 patent. A spring 46 and a hydraulic damper 44 are disposed within the steering head. As with the '099 patent, the '374 patent's spring and hydraulic damper are not removable without removing the rigid fork tubes, as the central inner fork tube 13 is coupled directly to the forks and forms (one of) the outer tube(s) of the hydraulic shock absorber.

The '155 patent, the '302 patent, the '092 patent, the '056 patent, and the '541 patent teach similar bicycle suspensions, in which the spring and shock absorber are not removable without removing the rigid fork tubes which are directly coupled to the shock absorber.

In these preceding patents, the fork tubes are rigid. They do not use telescopic forks. Their telescoping action is provided solely within the HeadShok mechanism, within the steering head tube itself.

The '714 patent, the '477 patent, and the '862 patent teach bicycle suspensions in which a shock absorber unit 14 is not coaxial with the steering stem 18.

OTHER ART

U.S. Patent No. 703,632 issued July 1, 1902 to Zimmerman. Zimmerman teaches a bicycle front suspension which includes rigid forks (C) rather than telescopic forks. He uses a pair of primary load-bearing springs (I) mounted more or less in line with the fork tubes. He also uses a spring (H, H') more or less coaxially disposed within the steering head (A). This compression coil spring operates only to resist rearward deflection of the front wheel, such as when running into a curb (page 2 first col. lines 48-55).

U.S. Patent No. 4,660,683 issued 04/28/1987 to Hayashi et al. Hayashi teaches an antilock brake, but tangentially also discusses the front suspension as including a guide pipe (77) which slides up and down inside the steering stem (76) so as to inhibit the relative rotation of the lower fork tubes (80) which are coupled to the bridge (78a) with the bottom end of the guide pipe. The guide pipe provides neither spring nor shock functionality, and only provides rotational clocking of the other suspension components.

U.S. Patent No. 4,512,592 issued 04/23/1985 to Yoshioka. Yoshioka teaches a fork brace or bridge (4, 11) which is bolted to protrusions extending from the upper ends of the lower, female fork tubes (2).

German Patentschrift Nr. 837,508 issued 28 April 1952 to Wolfram et al. As best as Applicant can determine, Wolfram teaches a front suspension including a telescopic fork mechanism which includes a single shock absorber (Stoßdämpfer 7) mounted between a pair of telescopic forks (gabelrohre 1, 2, 10, 11). The lower end of the shock absorber appears to be

pivotably coupled to the upper end of a bracing system (3, 4, 5, 6, 8) which is coupled to the lower end of the lower fork tubes and also supports the fender (13). The upper end of the shock absorber connects to an upper joint (obere gelenkauge 9). The element 10 which is identified as the steering head (steuerkopf) is, in reality, an upper triple clamp and is non-rotatably fixed to the upper fork tubes (11, 12). The linkage element 9 (gelenkauge) appears, from the rather unclear drawings, to be a post which extends toward the reader in figure Abb. 1, and to the upper left in figure Abb. 2. It further appears that the upper end of the shock absorber fits over this post. The shock absorber 7 appears to be a conventional hydraulic damper. Applicant cannot determine what, if anything, enables the shown suspension to rotate with respect to the frame (which is not shown). Applicant's best guess is that the upper and lower triple clamps (truncated portions of which are shown extending downward and to the right in figure Abb. 2) connect to a conventional steering stem (not shown, farther to the right) which, in turn, mates with the frame's steering tube with conventional bearings.

French Brevet D'Invention No. 1,027,087 was published May 7, 1953. It teaches a motorcycle front suspension in which the fork tubes contain the hydraulic dampening but no springs. A single spring unit 16 is mounted between the fork tubes. Please note that the spring unit is mounted in front of the steering stem (as clearly shown in Figs. 1 and 2), not coaxially within the steering stem. A cylinder 16 of the spring unit is coupled to the fork brace (not numbered, but shown below item 14 in Fig. 3). A piston 17, 13 of the spring unit is coupled to the upper triple clamp 2. A first spring 11 below the piston 13 supports the weight of the motorcycle front end under compression, and a second spring 12 above the piston 13 provides resistance under extension. The whole spring unit swings tangentially around the steering stem 4, just as the fork tubes do.

French Brevet D'Invention No. 1,076,590 was published October 27, 1954, and shows a very similar mechanism. A central spring 12 is located in front of the steering head 3.

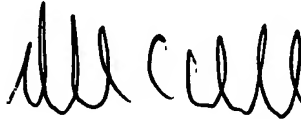
EPO Application No. 87830159.7 by Ceriani et al. became Publication No. 0,245,221 A2 on 11/11/1987. Ceriani teaches a very similar mechanism in which a central coil-over shock 55, 56, 57 is coupled to a fork brace 53 and to the upper triple clamp so as to be directly in front of the steering stem 36.

U.S. Patent No. 1,425,436 issued 04/17/1923 to Pullin. Pullin teaches a single spring unit 29 coupled between a pair of rigid fork blades 4 at the bottom and a handlebar mount 10 at the top. The spring unit is in front of the steering tube 17.

CONCLUSION

Applicant respectfully submits that all remaining Claims, as amended, are now in condition for allowance, and respectfully requests issuance of the patent.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "R. C. Calderwood".

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